Oct. 31, 1950 E. KATZBERG 2,528,003

UMBRELLA LOCK

Filed Dec. 11, 1946

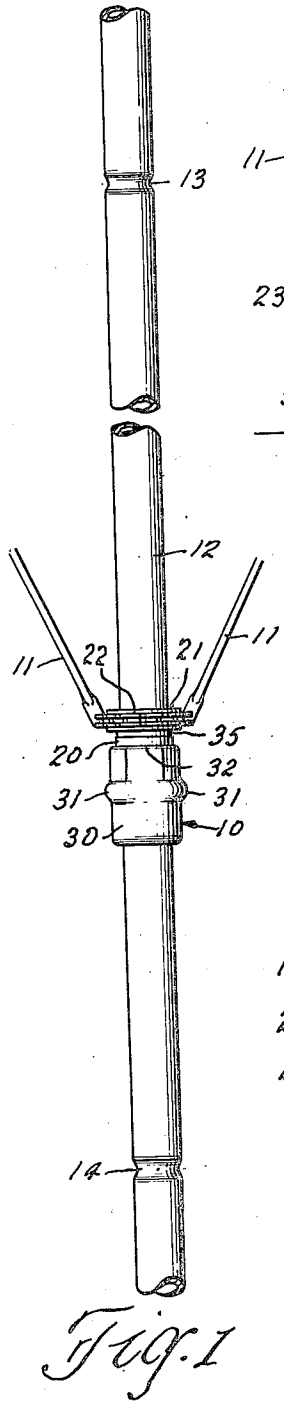

Fig. 1

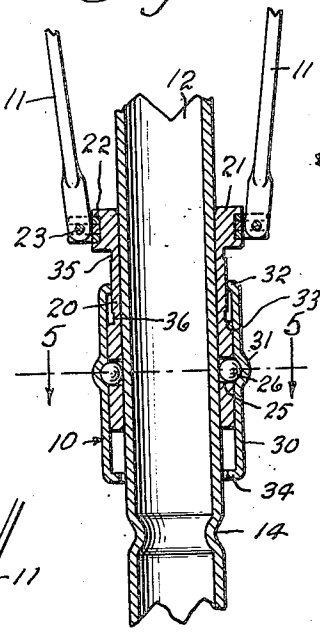

Fig. 2

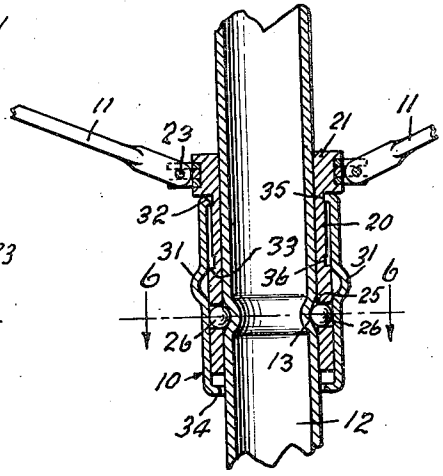

Fig. 3

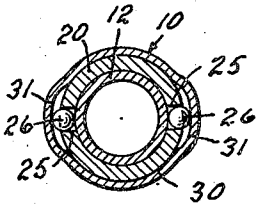

Fig. 5

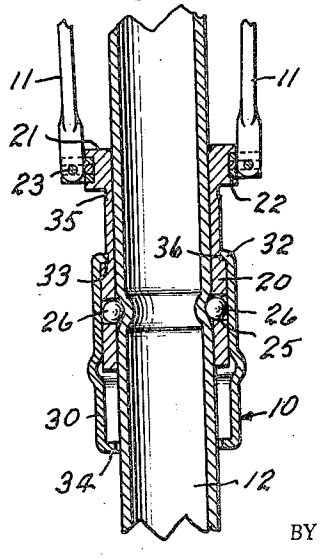

Fig. 4

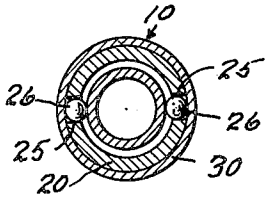

Fig. 6

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Patented Oct. 31, 1950 2,528,003

UNITED STATES PATENT OFFICE

2,528,003

UMBRELLA LOCK

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Application December 11, 1946, Serial No. 715,489

2 Claims. (Cl. 135—39)

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This invention relates to umbrella locks and more particularly to a novel and improved runner and shaft having positive lock means which are automatically actuated to lock the runner in either open or closed position, in combination with a release mechanism which is actuated by a simple movement of the hand.

An object of the invention is to provide an umbrella runner of the above type having novel and improved operating means.

Various other objects and advantages will be apparent as the nature of the invention is more fully disclosed.

In accordance with the present invention the runner includes locking means such as balls which are normally urged inwardly into recesses formed in the shaft at open and closed positions. When in these grooves the members positively lock the runner against movement. They are released, however, by axial movement of a sleeve and when released the balls are free to roll on the umbrella shaft from one recess to the other.

Although the novel features which are believed to be characteristic of this invention are pointed out more particularly in the claims appended hereto, the nature of the invention will be better understood by referring to the following description taken in connection with the accompanying drawings in which a specific embodiment thereof has been set forth for purposes of illustration.

In the drawings:

Fig. 1 is a broken side elevation of an umbrella shaft and runner embodying the present invention;

Fig. 2 is a longitudinal section through a portion of the shaft and runner on an enlarged scale showing the runner in an intermediate position;

Fig. 3 is an enlarged longitudinal section similar to Fig. 2 showing the runner in its upper locked position;

Fig. 4 is a section similar to Fig. 2 showing the runner in its lower locked position; and

Figs. 5 and 6 are transverse sections taken along the lines 5—5 of Fig. 2 and lines 6—6 of Fig. 3, respectively.

Referring to the drawing more in detail, the invention is shown as applied to a runner 10 carrying umbrella rib struts 11 and adapted to slide longitudinally on an umbrella shaft 12 which is preferably made of metal and may be tubular as shown or solid. The umbrella shaft and rib struts are of standard construction except as hereinafter specified. Only so much there has been shown herein as is necessary to an understanding of this invention.

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In accordance with this invention the runner 10 comprises a slide 20 which is adapted to slide freely on the umbrella shaft 12 and carries at its upper end a radial flange 21 to which an index ring 22 of standard construction is attached. The index ring carries struts 11 which are secured thereto by a wire 23 in accordance with the usual practice.

The slide 20 is provided with one or more openings 25 in which one or more balls 26 are inserted. These balls are adapted to engage annular recesses 13 and 14 in the shaft 12 for locking the runner in either upper or lower position. The balls 26 are held in locking position by means of a sleeve 30 which is positioned around the slide 20 and is provided with central embossed beads 31 which provide clearance for the balls 26 to roll along the outer surface of the shaft 12 as shown in Fig. 2. As shown, the beads 31 are spaced peripherally to register with the positions of the balls 26 so that the sleeve may be locked against longitudinal movement by turning the same slightly to bring the beads 31 out of alignment with the balls. In this position accidental shifting of the sleeve in an axial direction will not release the balls from locking engagement with the recesses 13 and 14 of the shaft 12.

The sleeve 30 is provided with an upper inturned flange 32 which is adapted to engage a shoulder 33 formed on the slide 20 to limit the downward movement of the sleeve. The flange 32 is split to provide resilient fingers which are positioned to enter recesses 35 and 36 in the slide 20 to restrain the sleeve 30 in its upper and lower positions respectively. The sleeve 30 is also provided with a lower inturned flange 34.

In accordance with this invention, with the sleeve in a central position and with the balls 26 in registry with the recesses formed by the beads 31, the balls are free to ride along the outer surface of the umbrella shaft 12. If the runner is then pulled downwardly to close the umbrella the parts will remain in the position shown in Fig. 2 until the balls 26 reach the recess 14 in the umbrella shaft 12. When this occurs the balls will enter the recess 14 and further downward pull on the sleeve 30 will cause the sleeve to be displaced downwardly to bring the cylindrical portion of the sleeve into registry with the balls 26 and securely lock them in the groove 14 as shown in Fig. 4. The sleeve may then be turned to bring the beads 31 out

of alignment with the balls and prevent the runner from being unlocked by axial movement of the sleeve. The split flange **32** also snaps into the recess **36** to restrain the sleeve **30** from axial movement.

In order to open the umbrella the sleeve **30** is turned to bring the beads **31** into alignment with the balls **26** and is then pushed upwardly until the beads **31** register with the balls. The balls are thus released and the sleeve is again in the position shown in Fig. 2. Thereafter the sleeve may be pushed upwardly until the balls register with the recess **13** in the shaft **12**. This arrests the movement of the slide **20**, whereupon further pressure displaces the sleeve **30** upwardly into the position shown in Fig. 3 and locks the balls in the recess **13**. In this position the flange **32** snaps into the recess **35** to restrain the sleeve which may be turned as before to bring the beads **31** out of alignment with the balls **26**.

For closing the umbrella the sleeve **30** is again turned and pulled downwardly until the beads **31** register with the balls **26** as before and release the same. The beads **31** may be made continuous around the sleeve **30** if desired in which case it will not be necessary to turn the sleeve for locking or releasing the balls and the sleeve will be held against displacement by the spring flange **32** in the recesses **35** and **36**. If the friction of the sleeve **30** is sufficient to prevent accidental displacement the recesses **35** and **36** may be omitted.

It is noted that the above construction is extremely simple and yet provides a positive lock in either open or closed positions which is readily released by movement of the sleeve **30** in the direction in which it is desired to move the runner. The beads **31** also provide a convenient hand grip for operating the runner.

Although a specific embodiment of the invention is shown, it is to be understood that the invention is capable of various uses and that changes and modifications may be made therein as will be apparent to a person skilled in the art. The invention is only to be restricted in accordance with the scope of the following claims.

What is claimed is:

1. An umbrella lock comprising an umbrella shaft and runner, said shaft having peripheral recesses at spaced points corresponding to open and closed positions of the runner, said runner comprising a slide mounted to slide on said shaft and having means carrying umbrella rib struts, a retaining ball carried by said slide and adapted to enter said peripheral recesses when in registry therewith, a sleeve slidable on said slide between locking and releasing positions, said sleeve having upper and lower surfaces to engage and retain said ball in said recesses when in closed and open positions respectively and having a central peripheral bead forming a recess to receive said ball when in releasing position, upper and lower annular recesses formed on said slide, and a split flange forming spring fingers on said sleeve to engage said last recesses to restrain said sleeve in the upper and lower positions on said slide.

2. An umbrella lock comprising an umbrella shaft and runner, said shaft having peripheral recesses at spaced points corresponding to open and closed positions of the runner, said runner comprising a slide mounted to slide on said shaft and having means carrying umbrella rib struts, a retaining ball carried by said slide and adapted to enter said peripheral recesses when in registry therewith, a sleeve slidable on said slide between locking and releasing positions, said sleeve having a surface to engage and retain said ball in said recesses when in closed and open positions respectively and having a peripheral bead forming a recess to receive said ball when in releasing position, an annular recess formed on said slide, and a split flange forming spring fingers on one end of said sleeve to engage said last recess to form a stop for limiting the movement of said sleeve on said slide.

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